8.0 DESCRIPTIONS OF SELECTED PLAN

8.1 Plan Components; including mitigation

The proposed fish passage alternative consists of construction a rock ramp with a slope of 0.5% in the north channel of the Yellowstone River below Cartersville Dam. The rock ramp will buttress the downstream face of the dam reducing the risk of failure, while providing fish passage and continued water supplies for the Cartersville Irrigation District and City of Forsyth. A new boat ramp will mitigate loss of the current boat ramp downstream of the dam.

8.2 Design and Construction Considerations

8.2.1 Design

Primary design considerations included:

- Providing a rock ramp for fish passage while maintaining water supply for the Cartersville Irrigation District and City of Forsyth
- Finding a riprap source with appropriate quantity/quality/cost
- Maintaining the south channel of the Yellowstone River intact
- Finding an alternate boat ramp location
- Minimizing operation, maintenance, and replacement costs
- Protection from ice and debris

The proposed plan addresses all of these considerations.

8.2.2 Construction

Construction considerations include:

- Challenges presented by working in a large river
- Logistics of obtaining, delivering, and placing rock
    - Quarries need adequate time to process the required quantity of rock (probably six months time is required)
    - There needs to be sufficient space to unload and temporarily stockpile rock in Forsyth until the contractor can reload and place the rock
    - The contractor most have capacity to move and place the rock matching deliveries from the quarry

None of these considerations are a fatal flow. Ideally, work could be completed in one construction season, between high runoff periods. Construction would not disrupt water deliveries to either the Cartersville Irrigation District or the City of Forsyth.

8.3 LERRD Considerations

The State of Montana and the Cartersville Irrigation District will provide lands, easements, rights-of-way, relocations, and disposal areas (LERRD) required for this project.

8.4 Operation and Maintenance Considerations

The rock ramp alternative is designed for minimal operation and maintenance costs.

8.5 Plan Accomplishments

The rock ramp alternative accomplishers all of the primary project objections:

- Maintain the ability of the irrigation district to divert water at all water levels
- Allow upstream passage of native fishes, particularly sturgeon
- Provide minimal maintenance requirements
- Increase public safety
- Maintain recreation opportunities at adjacent city park

8.6 Summary of Economic, Environmental and Other Social Effects

The rock ramp will have no significant economic, environmental, or other social effects.